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INSTASHOP

Abstract

This report displays the findings and reasoning behind our design decisions for the INSTASHOP application for supporting professional shoppers wanting to shop for multiple people (Project 3). This report includes thorough information about our prototype, and the link to the high-fidelity INSTASHOP prototype with the implemented functions is present, too.

For the use of the Figma prototype of the app, only relevant features to this app have been built out. Clicking anywhere that is not an implemented feature will shine bright blue on the features of the app that are meant to be clicked instead. To restart the app from the beginning, simply press the 'R' key on your keyboard and the prototype will start back as if the initial link had just been pressed. You may also use the back arrow on your keyboard to go backwards in your flow. All other information, such as analysis methods and data graphs, are included in the bulk of this report. The user of our platform is referred to as the "shopper" throughout this report.

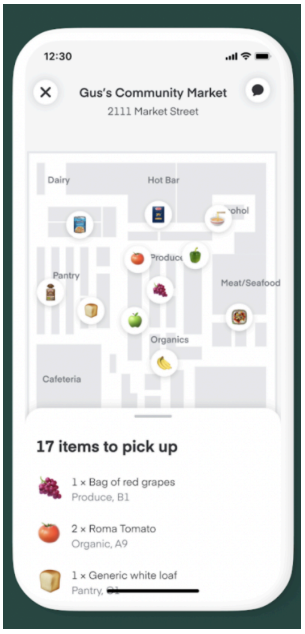
Important Links - Note: Visit links for color versions of prototype

- Prototype Version 1 Link
- Prototype Version 2 Link
- Generalized Task Analysis
- Prototype-specific Task Analysis
- Shopper videos:
    - Shopper Video 1 Link
    - Shopper Video 2 Link
    - Shopper Video 3 Link
    - Shopper Video 4 Link

Literature Review

With the growth of technology also comes the ease of facilitation in all aspects of life. One of those aspects that has become a growing industry in the past decade are personal shoppers and the companies associated with running the industry. Companies such as Instacart, DoorDash, Shipt, and even Uber have pioneered a system where people can order groceries from the comfort of their homes without breaking the bank. This industry has grown at insane rates as more and more people jump onto the idea of either becoming a customer and never needing to go to the grocery store or becoming a personal shopper and making a quick paycheck for doing someone else's weekly task.

As the market advances, companies are beginning to come up with more innovative and intuitive designs to make it easier for both shopper and customer alike. Systems such as augmented reality to simulate a map in the store, dynamic stocks that update the availability of instore products, or carts that automatically scan what has been put into the cart and determine what is left while shopping are just some of the designs being used to develop the feasibility of the remote shopping experience. Even physical systems such as towering or sectioned carts are being introduced to increase the efficiency and productivity of the market.



Operational Analysis

Purpose

Provide professional shoppers a centralized system with which they can shop for multiple clients simultaneously and seamlessly.

Subordinate Functions

- Cart to hold items
- Dividing mechanism for each client within the cart
- Item tracking (quantity and image)
- Scanning the item barcode
- Item location within the store
- Item ownership (who is ordering which item)

Potential Failures

- Spoiled food
- Melted food
- Incorrect quantity
- Mixed up client orders
- Cart not big enough
- Not enough dividers
- Too many clients accepted
- Inaccurate order due to customer changes (not noticing, lag time, connection issues)

Users

- Disorganized professional shoppers
- Organized professional shoppers
- Grocery bagger at the cash register
- Customer who ordered

Pareto Analysis

For the Pareto Analysis, we used community forums, such as Reddit, to accumulate the issues that shoppers of common professional shopper apps had with the established systems. The locations that we used for data collection include:

- r/InstacartShoppers on Reddit
- BBB (better business bureau) on www.bbb.org
- r/ShiptShoppers on Reddit
- r/Instacart on Reddit
- r/Doordash on Reddit
- r/UberEats on Reddit
- Apple App Store reviews of Instacart
- Apple App Store reviews of Shipt

From this data, we concluded that shoppers had a lot of problems with the base payment being low and tips being low or nonexistent for their orders. Shoppers also complained about multiple difficulties with communication. As a result, we chose to put a lot of focus into this for our prototype and give a clear indication of the pay and tip amount before accepting an order as well as offer an in-app messaging area between the shopper and client.

While analyzing these forums, we also learned that shoppers prefer to stay organized during the shopping process, and often do not shop for more than two people simultaneously. While not a direct element of the Pareto Analysis, we were still inspired to consider in-store shopping organizations as well as our limit for clients in each batch.

The Pareto Analysis table is on the following page.

Issues	**Count**	**Percentage**
Shopping for multiple customers at the same time	3	2.4%
No/Small Tip	24	19.2%
Messaging/lack of communication	8	6.4%
Chat functionality (software)	1	0.8%
Feeling unvalued by the platform	7	5.6%
Physically taxing	2	1.6%
Negative interaction with customer	8	6.4%
Base Pay	11	8.8%
Barcode scanning	1	0.8%
Customer service	9	7.2%
Customers adjusting order while shopping	2	1.6%
Out of stock	3	2.4%
Store employees	3	2.4%
Rewards program	1	0.8%
Cold items	1	0.8%
Tip Baiting	2	1.6%
Canceled order after shopping done	1	0.8%
Unjustified low ratings	4	3.2%
Long checkouts	4	3.2%
Knowing your order ahead of time	4	3.2%
Apartment complex delivery	4	3.2%
Slow business	10	8.0%
Distance	9	7.2%
Shopper prioritization	3	2.4%
Total	**125**	**100%**

Analysis of Similar Systems

For an Analysis of Similar Systems (AOSS), we chose systems that are both independent startups, established applications, and subsidiaries of larger store corporations. From these systems, we determined what element they did or didn't include based on a set of systems we felt were overarching in the industry.

Physical and Digital Components							
SYSTEM	**HEB Curbside**	**Instacart**	**Uber Eats (groceries)**	**Doordash groceries**	**Target DriveUp**	**Shipt**	**HyperAR**
Special tiered shopping cart	☑				☑		
Cart dividers (product or just shopping basket)	☑	**P**	**P**	**P**	☑	**P**	
Phone mount on shopping cart		**P**	**P**	**P**	☑	**P**	
UI has a map	☑	☑			☑		☑
UI has an order/prioritizatio n algorithm		☑					☑
In-app messaging with customers		☑	☑	☑		☑	
Images/icon for products	☑	☑	☑	☑	☑	☑	☑
Aisle number/location	☑	☑	☑	☑	☑	☑	☑
Name of product	☑	☑	☑	☑	☑	☑	☑
Quantity of product	☑	☑	☑	☑	☑	☑	☑

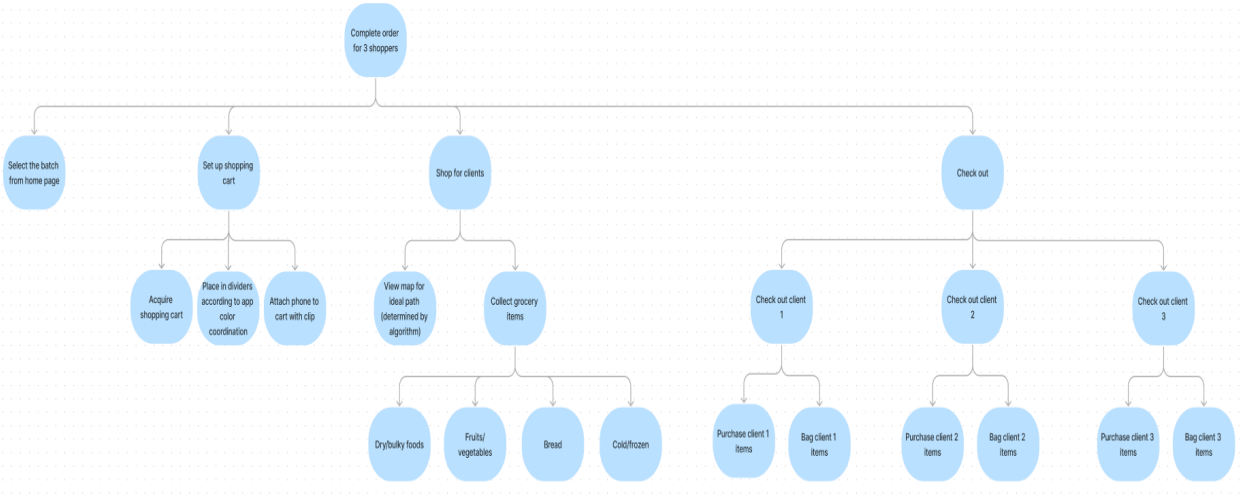
Many of the products had the possibility for the specified system (marked by a '**P**' on the chart), especially if it was an element of the physical component.

We found that many of the systems had a physical and digital component. Usually, the physical component related to the shopping cart, while the digital component regarded the handheld digital device and the application within. Additionally, we found that all apps exhibited simplistic but key traits of a shopping app: the name of a requested product, image of a requested product, quantity requested of a product, and location of a requested product.

An interesting finding was that not every system included a map and even fewer had what seemed to be an order for which to grab items. This became a key addition in our design process as we believe in-store navigation is an aspect that will revolutionize the shopping experience. Not only does it help shoppers locate aisles with greater ease, it also helps shoppers take the most efficient route throughout the store starting from entrance to exit. Additionally, we noted that not all apps included messaging between the customer and the shopper which is an essential component to include in our application, as shown in other data.

Generalized Task Analysis

Link for easier viewing: [Generalized Task Analysis]



This task analysis follows the flow for completing an order (also known as a batch) with 3 clients in it. We decided to do an initial general task analysis to understand the order of tasks that a shopper of our application would do. This inspired ideas about our application flow and what the ideal journey throughout the shopper experience would be. In our prototype-specific task analysis (later in the report), we provide more details on the “shop for client” section.

Error Analysis

For the Error Analysis we chose four videos of people shopping. Some of the videos focused on the use of a professional shopper app and some of them were just simple videos of a person grocery shopping. This variety allowed us to gain data on the types of shoppers that use the app and what people are thinking while in the shopping process. While watching these videos we took note of any errors they made while using the app and any possible errors that may come up for shoppers of our own app.

Error Analysis 1: Instacart Shopper POV Ride Along | 12-15-22 | Great Pay by JB Breaks Free (Shopper Video 1)

- What errors are committed?
    - Grabbing the wrong item.
    - Scanning the wrong item.
- How do we
    - Stop the error from happening (error control):
        1. Can't necessarily stop the mistake.
        2. Don't allow incorrect items to be accepted for a scan.
    - Help users see error before detrimental events occur:
        3. Add images of the items and clear text.
        4. Provide a popup that alerts about an incorrect item being scanned.
    - Minimize error consequences:
        5. Provide a checklist of images when all items have been scanned.
        6. Not allow items to be scanned that are not a part of an order.

Error Analysis 2: GROCERY STORE SHOPPING* COME WITH ME by PrettyNflawed (Shopper Video 2)

- What errors are committed?
    - Backtracked through the store.
    - Grabbed items that weren't needed/wanted.
- How do we
    - Stop the error from happening (error control):
        1. Path exactly what order and which way is how someone should be shopping for the client(s).

2. Keep a list of items to be purchased from the store.

- Help users see error before detrimental events occur:
    3. Display the optimal mapping path when getting into the store.
    4. Provide a popup that alerts about an incorrect item being scanned.
- Minimize error consequences:
    1. List items in optimal order of efficiency.
    2. Display images of the items on the list.

Error Analysis 3: Instacart Shopper 2022 | Kroger FULL SHOP ALONG In-store First Person POV **UNCUT by Ace's Hangout (**Shopper Video 3**)**

- What errors are committed?
    - Not messaging customers when an item is out of stock.
    - Grabbing cold items early on.
    - Accepting the order after grabbing items (caused other problems):
        1. Scanning items in large groups, rather than individually.
        2. Needing to put items back.
        3. Backtracking because items were forgotten or added before order was accepted.
- How do we
    - Stop the error from happening (error control):
        1. Require a reasoning for not being able to scan an item.
        2. Implement an optimal shopping path algorithm that gives high priority to temperature constraints of items.

3. Make shoppers accept an order before starting their shopping; when items are previewed on the digital application, create a clear indication to scan the item then and there.

- Help users see error before detrimental events occur:
    1. Prompt shoppers to message customers when filling an out of stock option on the app.
    2. When scanning a cold item early, display a popup that encourages the shopper to wait till the end.
    3. Show that they are not following the route on the store, which can make them feel as though they are doing something wrong and need to correct their errors.
- Minimize error consequences:
    1. Provide a messaging system to contact clients when an item is out of stock.
    2. Place items in order of which you want shoppers to pick up the items.
    3. Create a checklist system so the shopper knows exactly what to do next and also what items have already been scanned.

Error Analysis 4: How to Make Money With Instacart | Shopper Training by Reezy Resells (Shopper Video 4**)**

- What errors are committed?
    - Labeled an item as out of stock and later found it.
    - Unable to find items due to image on app and packaging being different.
    - Providing a subjective replacement for an item.
- How do we

- Stop the error from happening (error control):
    1. Properly label and image each product in the database.
    2. Ensure all images are up to date for each product.
    3. Require customer confirmation before scanning a replacement.
- Help users see error before detrimental events occur:
    4. If store information is available, provide an image of where on the shelf the item should be located.
    5. Provide past label images of product in a further description.
    6. Prompt shoppers to message customers when filling an out of stock option on the app.
- Minimize error consequences:
    1. Provide clear images for products.
    2. Request updates from store product managers when an items package is updated for updating the images in the app.
    3. Provide a messaging system to contact clients when an item is out of stock.

General Possible Errors

- What errors are committed?
    1. Mixing items in multiple orders.
- How do we
    - Stop the error from happening (error control):
        1. Provide multiple dividers for use in the shopping cart when shopping for multiple clients.

- Help shoppers see error before detrimental events occur:
    1. Emphasize the importance of organization when shopping for multiple clients.
- Minimize error consequences:
    1. Implement a color coordination system in the app that applies a separate color and photo to each client's order.

From these errors, it was clear that we needed to focus on a few key points:

1. Ensure that only scanning for the correct item gives the correct response. If an incorrect scan occurs, alert the shopper as soon as possible.
2. Prioritize a quick and efficient pathway through the store that also optimizes acquisition time of cold items (like ice cream and frozen foods) last.
3. Implement a helpful messaging system for which shoppers can inform clients about out of stock items, or clients can inform shoppers of any changes to their order.
4. Create an organization system that separates the orders of different clients, while all fitting in one cart.

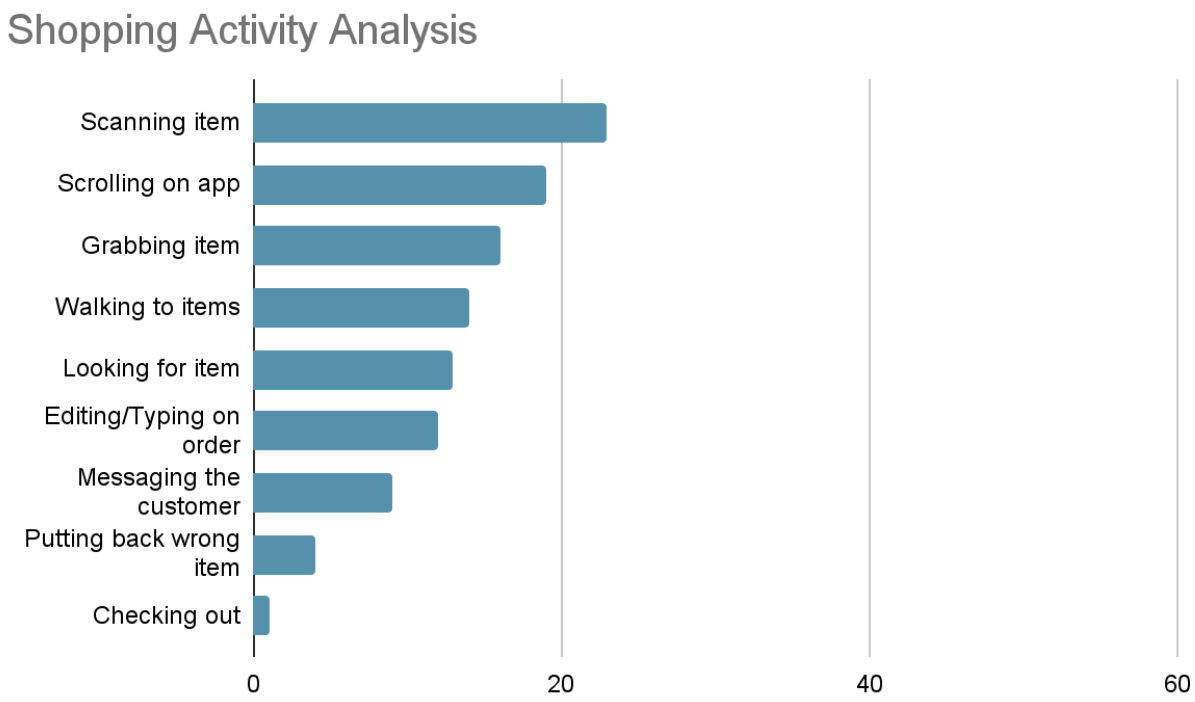
To mitigate these errors, our team created solutions that best addressed each error by keeping the shopper's needs and goals as the top priority. These solutions include error prompts (not fully implemented for our prototype), optimal pathing located on the map view of the app, a messaging center to contact clients, and different colored bags that coordinate with the colors of each client in the app.

Activity Analysis

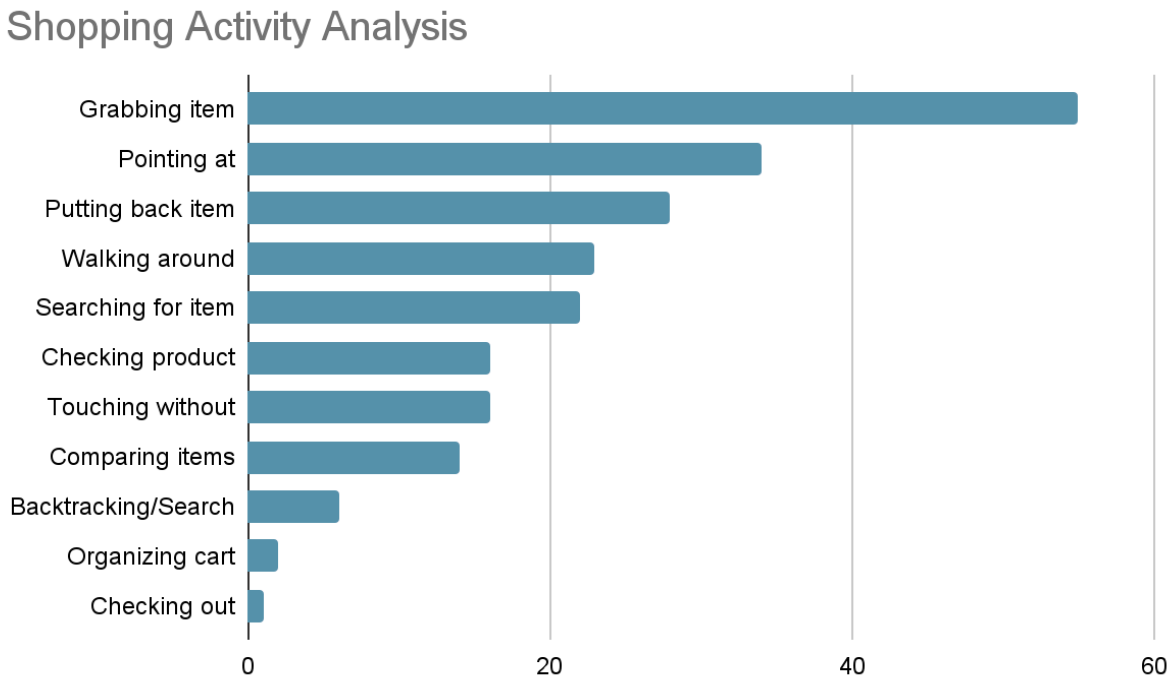
For the activity analysis, the same four shopper videos were used and our team focused on exactly what they were doing throughout the video. While watching these videos, we took note of every action that the person took.

Note: There was a slight generalization for the action of searching for an item.

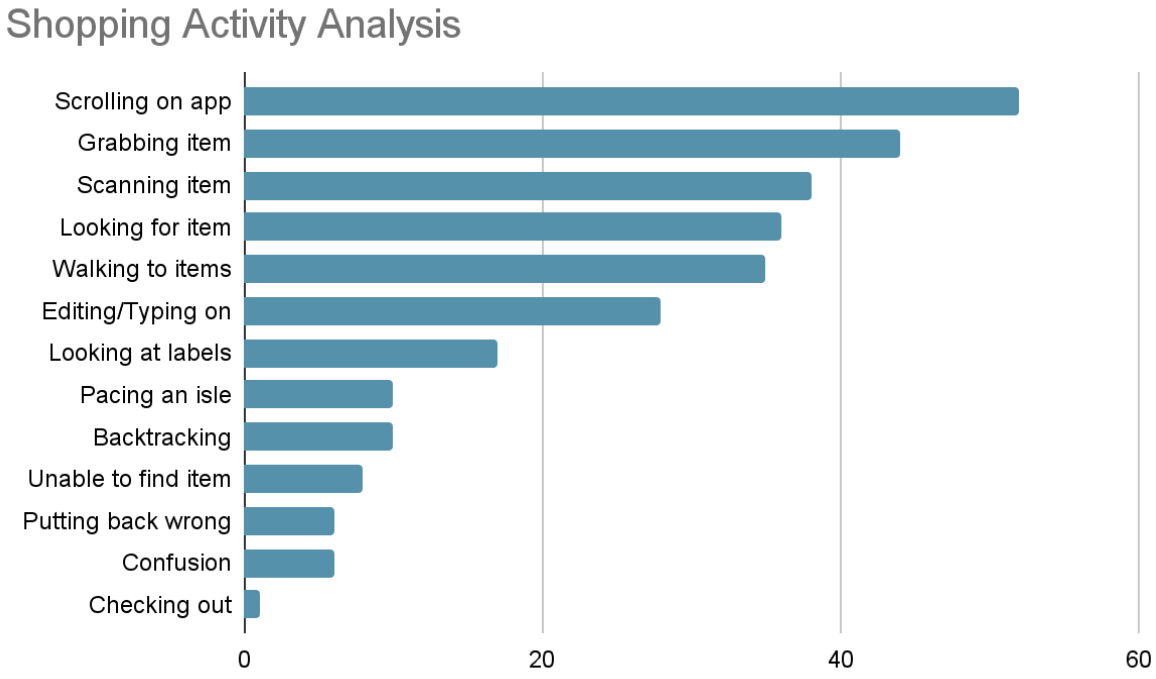
Activity Analysis 1: Instacart Shopper POV Ride Along | 12-15-22 | Great Pay by JB Breaks Free (Shopper Video 1**)**



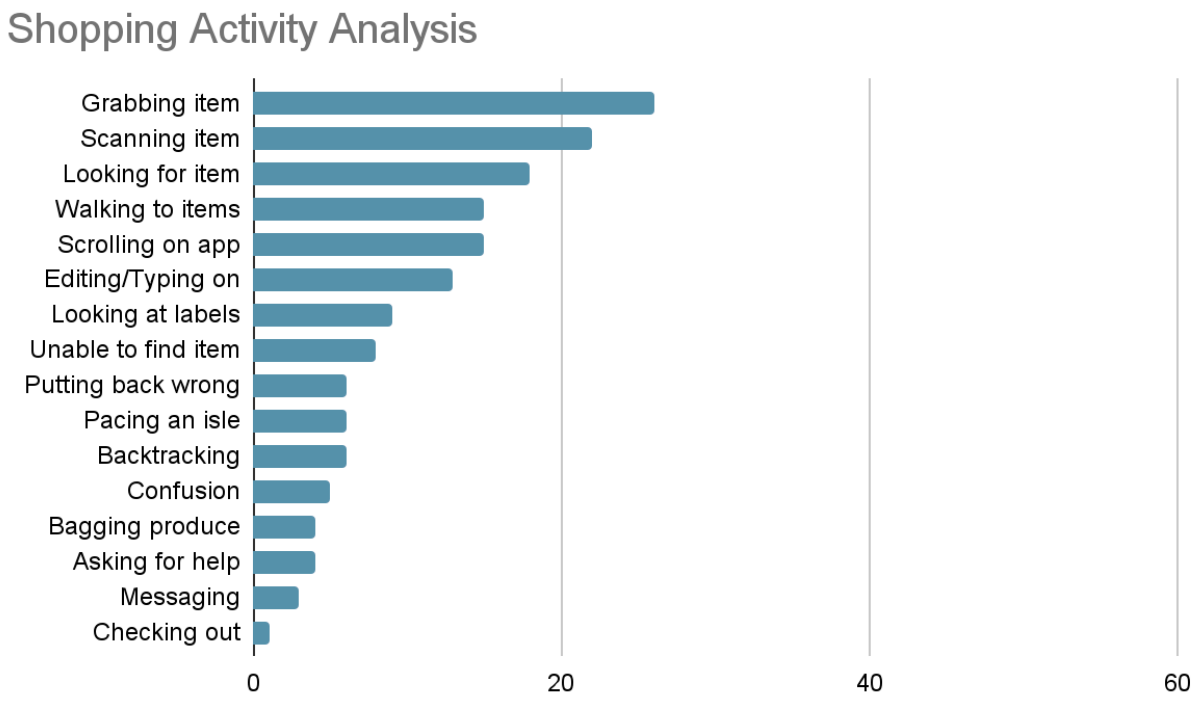
Activity Analysis 2: GROCERY STORE SHOPPING* COME WITH ME by PrettyNflawed (Shopper Video 2)



Activity Analysis 3: Instacart Shopper 2022 | Kroger FULL SHOP ALONG In-store First Person POV **UNCUT by Ace's Hangout (Shopper Video 3)**

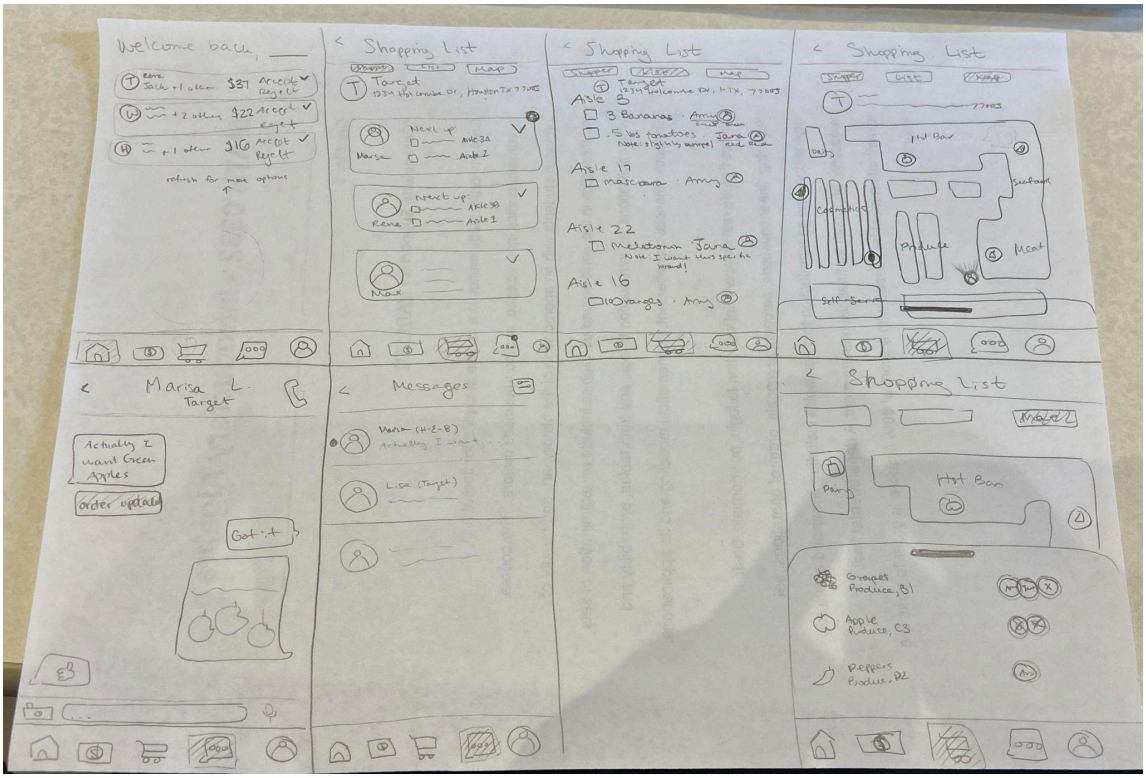


Activity Analysis 4: How to Make Money With Instacart | Shopper Training by Reezy Resells (Shopper Video 4)



From the Activity Analysis, the team chose to emphasize clarity of the images on our application as well as providing an efficient order for which to grab the items for a client. The data shows that there is an excessive amount of time spent searching for items on an aisle or backtracking because an item was forgotten or unable to be found. We do acknowledge that each shopper will have individual differences on how they prefer to shop, which is very clear in the data, however we felt that giving shoppers a straightforward procedure to follow, if they so choose, with distinct and consistent images was the best option to combat the idle time that we see from this data.

Low-fidelity Digital Prototype



This was the first version of our application before it was created in Figma. We started off knowing that we wanted to have a navigation bar at the bottom of the screen with 5 icons including a home page, a profile page, a payments page, a messaging page, and a shopping cart page. The shopping cart page is where all order information would be contained, and that would be the main focus of the app.

For the home page, we acknowledged that a lot of the issues that shoppers had with established apps was with not properly displaying the pay and tip for an order or “batch” they were about to accept. So, upon opening the app, we put pay at the forefront of the shopper’s visual field as they accept an order. Additionally, each order has a small dropdown that can be extended to show who is included in the order and the exact payment breakdown.

Then, our team focused on what the main ordering page would look like, as represented by the shopping cart icon on the navigation bar. We recognized that we wanted multiple parts for

the shopping cart page so we settled on splitting it into multiple views. We decided to include a view that displayed all of the items that each individual client ordered, a view for the optimal order that a shopper could walk around the store to collect the ordered items, and a view of the in-store map that displayed the items from the list and where they were in the store.

When designing the view for each individual client we felt that “Shopper View” fit the best to individualize each client. At this point we also realized that associating each client with a color ring around their image would both give the shopper a way to separate the clients as well as give our app a splash of color for a friendlier shopper experience. In the class, there was an activity where a student had to sort balls into slots, but a lot of cognitive workload was taken off when there was some color coordination done for her. This allowed her to complete the ball sorting task with significantly higher efficiency while also decreasing her cognitive workload. Our team took heavy inspiration from this class activity, implementing this color coordination into our product. We decided that the color ring around the client’s icon would correspond to the color of the bag in the shopping cart.

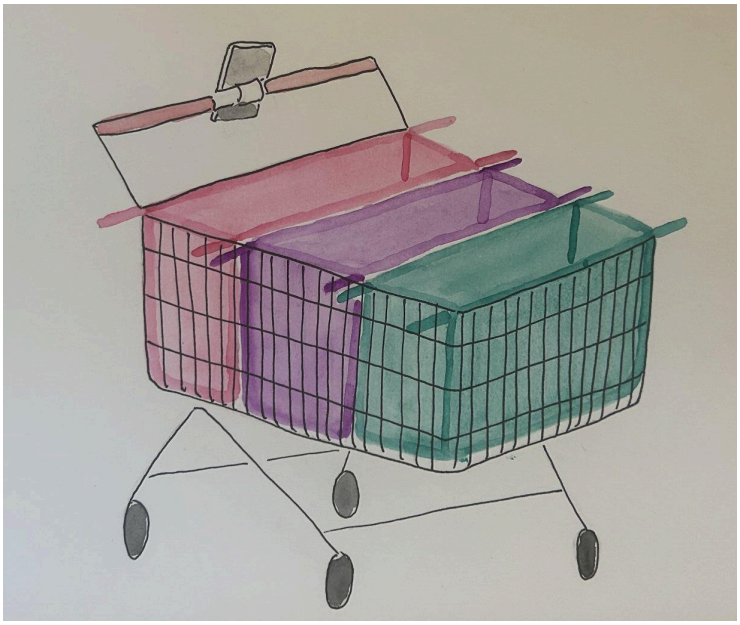
Next, the optimal order of items was displayed under “List View” and this would resemble a shopping list. This view’s aim was to be as straightforward as possible for shoppers. We also noticed that this was a prime location for placing the aisle numbers for each item and who was ordering each item as well. Instead of using the clients’ names, we used their icons to indicate who wanted which items.

Lastly, we created a map view of the store. We decided on the title “Map View” to again be straightforward on what the view was showing. At this stage in the process we had not yet decided how we would show the path for the map but were contemplating how it would look, as shown with the small dot with a cone field of vision representing the shopper. We also added the

aspect of a secondary taskbar available to map view only that can display contents similar to list view but can be accessed on the map without completely changing pages.

Finally, we also drew up the design that we wanted for the messaging section of our app. Based on the data that we saw from the Pareto, Error, and Activity Analyses, we wanted to give the option for full chat capability to both the shopper and clients. We used the iMessage application as an inspiration for much of our messaging.

Low-fidelity Physical Prototype



The physical prototype is a crucial component of this product. For our physical prototype, we only have a low-fidelity prototype version of it, however the image is colored and coordinates well with both the expectations we have for a high-fidelity physical prototype as well as our application. The physical prototype of the cart includes a phone mount and three colored bags.

Shopping carts have a generally standard shape and size across the country. So, our team just decided to include two attachments to this already-great shopping aid.

First, there is a phone mount. The phone mount attaches to the handle of a standard shopping cart. This mount is useful to shoppers as they wouldn't need to be holding their phone their entire time while roaming the store for the client. However, when they reach to scan their item, they can easily take their phone off of the mount, and swiftly return it when completed with their scanning task. The great part of this phone mount is that it is completely optional for a shopper to use this — if they wanted, they could simply hold the phone the hold time.

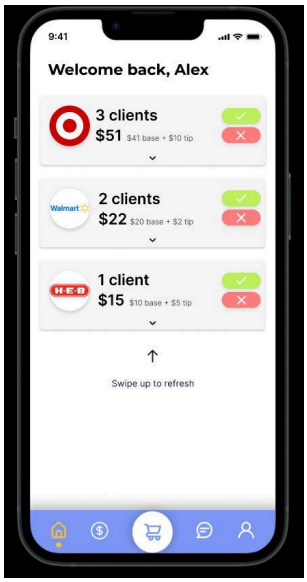
Additionally, the prototype includes three colored bags that can be placed inside of the shopping cart. These bags can be used to separate clients orders when shopping for multiple clients at the same time. Each bag coordinates with a color of a client in the app. As described previously, our team took heavy inspiration from the colorful ball sorting task in class, and we hope that this color coordination can greatly reduce cognitive workload for our shoppers.

We chose to have a maximum of three clients for a shopper at one time. This is because professional shoppers for Instacart and Shipt typically shop for 1-2 clients simultaneously, so even 3 clients is a large step up. However, our team is confident that our color bag system will allow for shoppers to handle 3 clients with ease and minimal errors.

High-fidelity Digital Prototype - Version 1

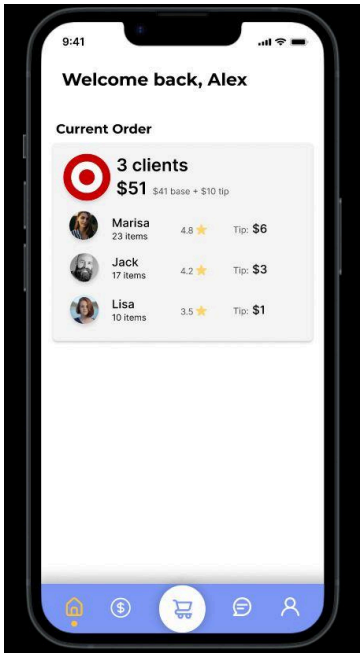
Link to the functional prototype: Prototype Version 1 Link. This prototype was our initial digital version created from our low-fidelity prototype. We highly recommend that the digital prototype be navigated as the contents of this section are read.

Our app starts on an orders screen and from this page you can click on the green accept button to accept a “batch” or order.



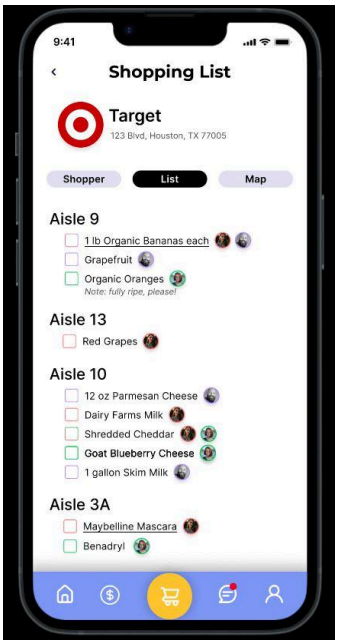
There is also the capability to click on the dropdown arrow to see further details of the order before accepting. These details include the people in the order and the payment breakdown for each person. This page is kept simple and clean so there isn’t any confusion about what order is being accepted and how much each person is accepting. Here, the tip amount, store logo, and number of clients are all highlighted. Also, the orders are offered in the order of highest to lowest tip, as payment was the biggest complaint on the online forums. This page allows for shoppers to make a quick judgement about which order to select.

Once clicking the accept button, indicated by a green check mark, you will be brought to the home page. On this homepage you can see the order that is currently active, the names of the client, base payment, tip amount, rating of the clients for the order, and the location of the store. We wanted a centralized location for where someone can find the tips and payments of the clients because it was mentioned so often in the issues. We wanted to emphasize the client's ratings, as calculated by previous shoppers rating their experience with that client, as our Pareto Analysis showed that unpleasant interactions with clients was a common complaint.



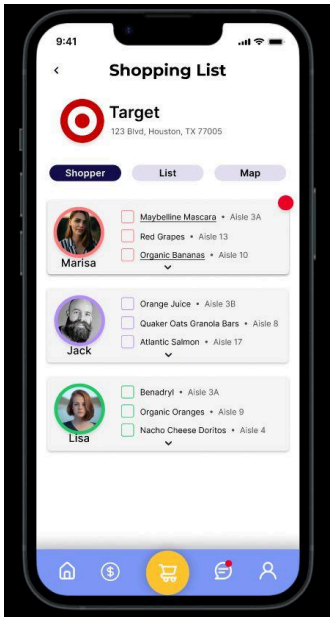
From this home screen, you can navigate to any of the other main functions of the app: payments, orders, messaging, and profile. All information in the order tab is relevant to the current batch being shopped for. Most likely, shoppers will first navigate to the center cart button to access order details, so the flow will continue from there.

Clicking on the cart button takes the shopper to the initial “List View”.



In this view, there are a few key elements. Firstly, the order of the list is in the optimal order for the shopper to acquire items so that efficiency and quality control is maintained. This is to coincide with all of the data we found where clients disliked that shoppers would grab frozen or cold items in the beginning, so cold items would be delivered thawed or melted. This optimal path also prevents shoppers from frequently backtracking in the store. Secondly, the list is organized in a way that the aisle numbers are above each group of items on the same aisle. Also, the items display the context of which client is purchasing the item and any notes that the client has. Finally, the checkboxes are coordinated to match the color of the client buying the item. When 2+ clients want the same item, the checkbox reflects this by having a gradient of the two shoppers' colors. These features, while also making the app presentable, give ease of access to all information a shopper may need for the grocery order.

From this view, a shopper can click one of the options on the top bar to navigate to either map view or shopper view. We'll first look at the shopper view of the "Shopping List".



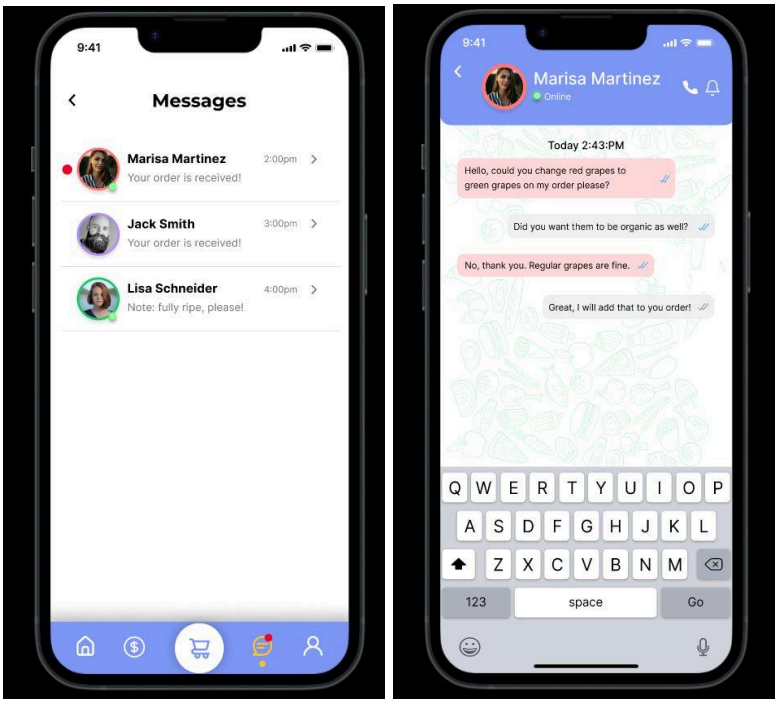
In the shopper view, shoppers have access to the individual orders of each client they are shopping for. This view is similar to the initial home page but offers more detailed grocery-specific information that would be helpful for completing an order. What should be noted on this page is the color coordination of each client and the indication of a new notification on Marisa's order. We wanted to keep a consistent theme throughout our prototype with the use of coordinating colors for each client because we felt this would drastically decrease the mental workload it takes to use the application. Additionally we felt that these colors paired with portraits give life to the clients a shopper is shopping for. For the notification bubble, our data suggests that shoppers and clients alike appreciate being able to communicate during an order if need be, so we felt that giving indications in multiple places would facilitate that communication process. It should be noted that in a full implementation of the INSTASHOP app, the dropdowns for each of the clients would be able to display their entire order and details about each object, similar to how the list view shows items but without organizing by aisles.

From this page a shopper can then click on the top tab button that says “Map” to be taken to the map view page.

In the map view, shoppers have access to a few key features. Firstly, the path of the map view is very direct and shows the most efficient way to collect the grocery items. Additionally, each of the items on the map, in the fully working application, is accessible and can be scanned from the map. Even further, each item has specific aspects to it. The number tagged onto the top of some of the items works similarly to grouping in GoogleMaps. These items can be zoomed in on, in the fully working application, to reveal there are multiple items in close proximity. Also, each item has a color ring corresponding to which client has ordered the items. Once again, there is a gradient ring surrounding items if it is being ordered by multiple clients.

One of the most important features of the map view is the taskbar that can be pulled up from the bottom of the page. When opened, this taskbar displays more detailed information about the items displayed on the map. Specifically the item name, aisle number, who is ordering each item, and the order displayed for the optimal path.

Other than the three key views, the app also supports other key aspects of the professional shopping process. The first of which was previously mentioned would be messaging between clients and the shopper. The messaging page can be accessed from any page by clicking on the bottom chat bubble icon. In this prototype, the chat bubble always has a small red notification symbol on it to indicate that there is a new message to be read.



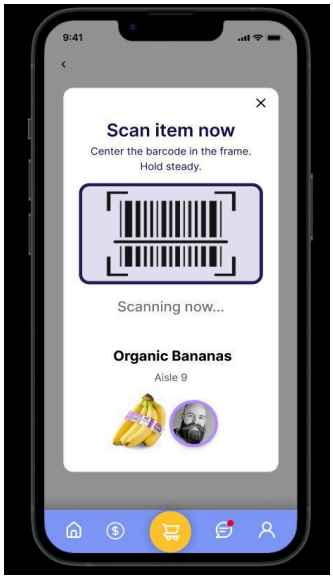
The messaging screen is similar to iMessage or most standard chat features. It offers the ability to send and receive messages from clients, displays if they are currently online, and indicates if a new message is available. There is also the option to call the clients directly.

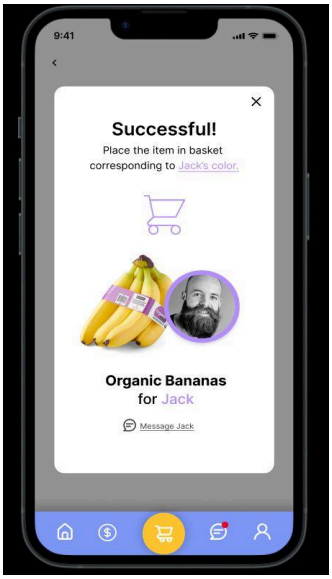
The final important feature that is more or less fully implemented is the ability to click an item and “scan” it into the cart. This can be done by clicking on either the item name in any of the views, the image of the item on the map view or the checkbox of the item in the list view. When one of these has been selected a scanning page will appear

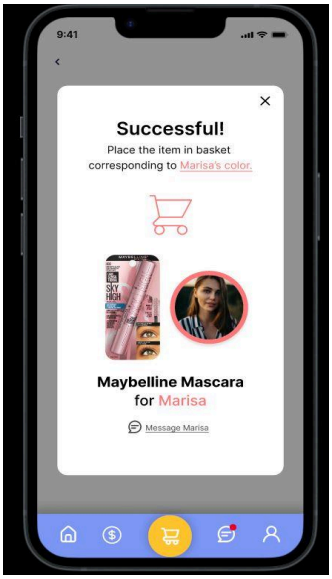
On this page, the shopper will be asked which client they are scanning the item for, if there are multiple clients buying the item. The shopper will then select the scan symbol for the client they would like to scan the item for. In our implementation only the “scanning” for Organic Bananas for Jack and Maybelline Mascara for Marisa has been implemented, but for a fully working app this would work for all items on the lists.

Once the shopper selects who they are scanning for, they will be prompted with an option to scan screen. Again, because this is a prototype there is no ability to actually scan the item. The shopper will hover their mouse over the barcode area and be presented with a completed scan screen. This resembles how most modern applications automatically detect the barcode, scan the barcode, and move to the next screen.

(For Jack's Order) (For Marisa's Order)



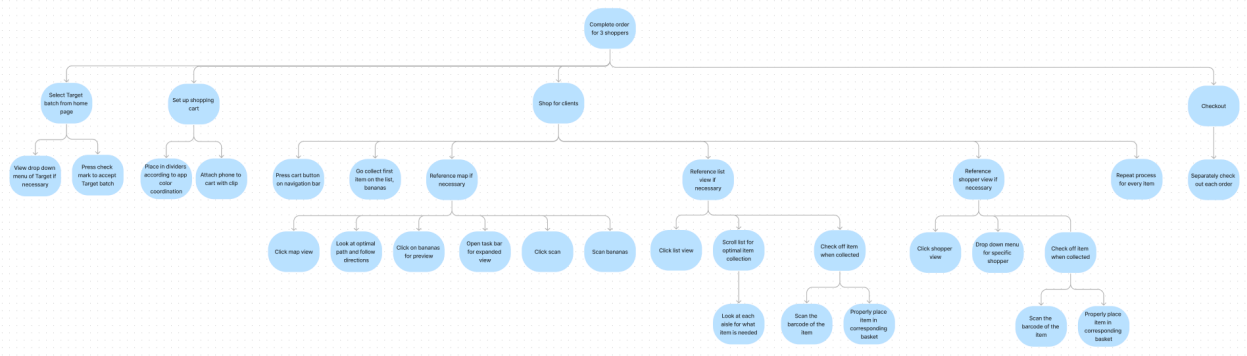




One important note about this final screen is that it is color coordinated for the person being scanned for. The shopper is easily able to identify which basket they should be placing the item into once they have finished scanning.

Prototype-specific Task Analysis

Link for easier viewing: [Prototype-specific Task Analysis]



This Task Analysis follows the flow for completing the batch order that is displayed in the high-fidelity prototype version 1. The task analysis starts off by accepting the Target order and setting up the shopping cart as the physical prototype shows, which includes attaching the bags and the phone mount. The following steps are a repeated cycle which details most of the app's use. As a summary, the repeated cycle consists of referencing each one of the views (shopper, list, and map) as necessary to find and scan the next item on the list and doing this process until there are no items left to get for the order. Finally the task ends on checking out the order at the cash register. This task analysis focuses more on the "shop for client" section as that is the bulk of the INSTASHOP app.

Cognitive Walkthrough

Following Spencer's CWT Steps, and based on the Guided Flow section of the Usability Testing.

User: A professional shopper (new or experienced)

Task: Accept an order and scan two items from the order

The goal: Understand if the application is usable by all types of professional shoppers and is able to do the necessary functions required by stores and clients

Description of interface: iPhone 14, latest iOS installed

Action sequences for completing the tasks:

1. **Accept the Target order**
    a. *Will the user know what to do at this step?*
        i. Yes. Accepting the batch is the first step to accessing all contents. The green accept button is at the top right of the screen.
    b. *If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?*
        i. Yes. The shopper will be sent to a new page displaying their order.
2. **Navigate to List View**
    a. *Will the user know what to do at this step?*
        i. Maybe. The average shopper will attempt to push the large center button as the next step. This button resembles a shopping cart and could be associated with a shopping list.
    b. *If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?*
        i. Yes. The shopper will be taken to the "List View" page. This is the desired page they want to be on.

3. **Scan Mascara for Marisa**
    a. *Will the user know what to do at this step?*
        i. Yes. The mascara is clearly labeled and underlined at the top of the “List View” page.
    b. *If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?*
        i. Yes. A new screen will prompt the shopper asking if they want to scan the item. Each time they progress on this popup the shopper will be given new prompts until they have successfully scanned the item.
4. **Navigate to the map view**
    a. *Will the user know what to do at this step?*
        i. Maybe. Once the shopper is done scanning the mascara, they should press the “x” at the top right of the window. Once back into the “List View” there are three tabs at the top of the screen, one being labeled “Map” which will take the shopper to the “Map View”.
    b. *If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?*
        i. Yes. Once the shopper is on the “Map View” page there will be a clearly displayed map of the store with icons of items in the current batch.
5. **Scan Organic Bananas for Jack**
    a. *Will the user know what to do at this step?*
        i. Yes. The shopper will click the indicated banana icon or use the taskbar to click the “Organic Bananas” label. The shopper will then follow the same process for the mascara scanning.

b. *If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?*

    i. Yes. As with the mascara a popup window will appear and give the shopper new prompts until they have successfully scanned the item.

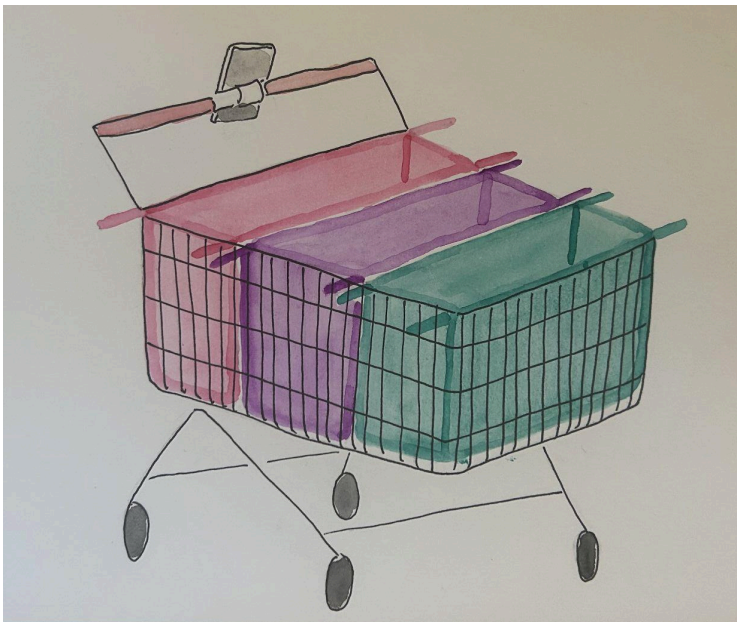
Usability Assessment

Usability Assessment Description

We conducted a usability assessment on ten people, not including ourselves since we knew how to use the application already. We presented interviewees with the following task description and set of questions:

Description: You are a professional shopper for INSTASHOP. As a shopper, you get orders through an app. You also have a few colored bags that you will attach to your cart, as shown below. In your email, you have the link for the app and the tasks. You can just verbalize your answers while I take notes. I won't intervene unless there are major issues, so good luck!

What your cart looks like:



App Link: Instashop App

Tasks:

Questions - Guided flow

1. Who is ordering items from Target?
2. Accept the Target order
3. Navigate to the ordered items
4. Navigate to List View
5. Purchase Mascara for Marisa
6. Navigate to the map view
7. Purchase Organic Bananas for Jack

Free Flow -

1. What was Marisa's message about?
2. What area of the store are the cash registers?
3. How much tip is Lisa leaving?
4. What aisle is the Parmesan cheese in? Who is ordering it?
5. What note did Lisa leave?
6. Name one item being ordered by multiple people?
7. What aisle is the grapefruit in?
8. How many people need to buy Dairy items?
9. Who wants organic bananas and in what quantity?
10. What area of the store is the cosmetics section?

After clicking the link we had them first follow the guided flow questions. These questions went through the necessary basics of the app, such as finding each client, accessing each set of views, and "purchasing" the items for the clients. From these basic questions we were already able to gain valuable insight about what worked for our app and what didn't. We instantly realized that people did not notice many of the subtle features that we had placed in for ease of use. For instance, when asked who was ordering from Target, many interviewees assumed the name at the top "Alex" was the person ordering, when in fact this was the place holder name we gave to our usability interviewees. Interviewees also did not notice the dropdown menu on the first page, which allowed shoppers to see who was in each order – this was completely skipped. As a result, we decided to rearrange these helpful features to better catch shoppers' attention in Version 2 of the app.

We then tasked interviewees to follow the free flow questions to identify their ability to navigate the more advanced details of the app. From these free flow questions, we found that there were many struggles also present in these detailed aspects. Features that went overlooked included: finding the note that a client has left for their order, locating aisle number for items on the map view and list view, and completely missing the taskbar at the bottom of the map view. These findings showed that although we felt our app features were very noticeable, there needed to be more emphasis on the important features a shopper will be expected to use.

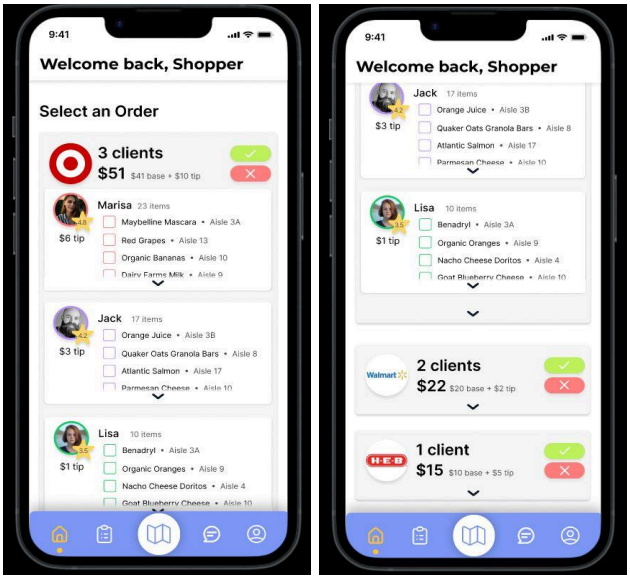
Although there were many elements to fix, our team received a lot of positive feedback as well! The interviewees really enjoyed exploring different views of the app, and said they felt confident they could handle 3 clients as a shopper. This is before the full app has even been implemented, which is an overwhelmingly good indication that features in our app are helping accomplish our shoppers' goals. The interviewees also communicated that the color coordination between the app and the shopping bags made it very easy for them to understand where to place

items after scanning. Furthermore, many interviewees stated that they can imagine what the actual app would look like if it were fully fleshed out which is a good indication that this prototype closely resembles what a fully-coded implementation would look and feel like.

Most interviewees said they enjoyed clicking through the app and answering the questions and said it felt similar to a scavenger hunt. Our team also thoroughly enjoyed watching our creation get interaction with several new sets of eyes.

High-fidelity Digital Prototype - Version 2

Link to the functional prototype: Prototype Version 2 Link. Our team recommends opening this prototype and navigating through it as this section is read. For our second round of prototypes we relied heavily on the Cognitive Walkthrough and Usability Testing results to adjust to what shoppers did and did not enjoy. The app now opens to a new first page with improved features.



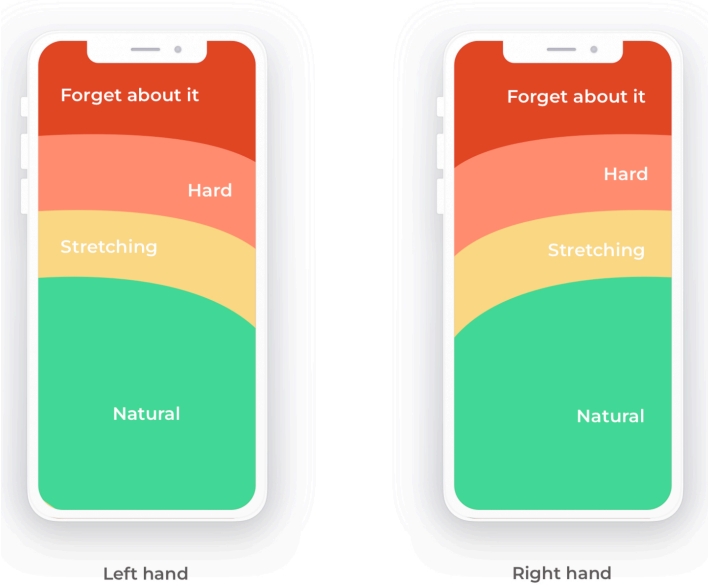
Starting with the name on the screen, we noticed that some shoppers mistook “Alex” as the name of a client, so we changed the name to “Shopper” to clarify that this is the name of the shopper. We also noticed a tendency of shoppers to overlook the dropdown arrow for finding the

clients inside of a batch. Our solution to this includes a scrollability to the starting page as well as consistently having the top batch already open for instant identification of who is in a batch, what they are ordering, and how much they are tipping. Each client rating is displayed for more accountability and an indication to the shopper what type of client they will be working with.

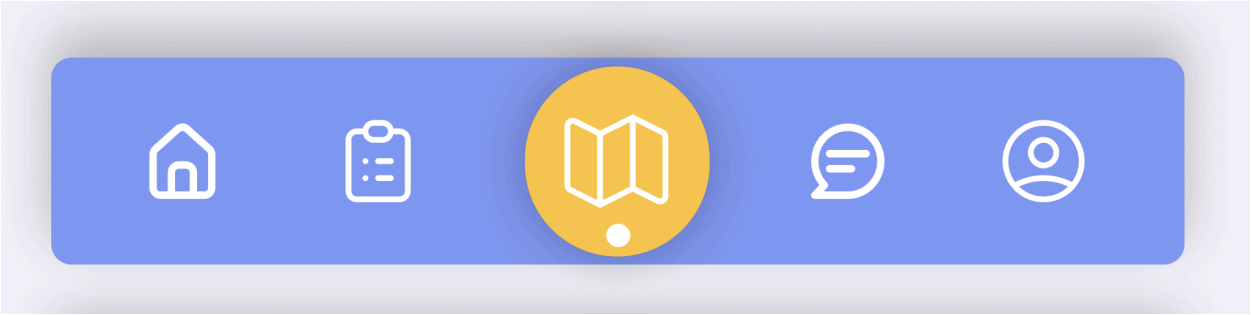
Furthermore, we merged the starting page, home page, and parts of the Shopper List to be one singular page that greets the shoppers when the app opens. We felt that these pages displayed too similar information to be spread out so thinly.

Another general aspect of the prototype that was changed were the icons on the navigation bar at the bottom of the screen. We had two main reasons for changing the navigation bar. The first of those reasons being that the icons on the navbar did not properly satisfy what shoppers needed to have access to.

Secondly, as shown by this image of thumb accessibility, our app was not accounting for optimal “thumb zones” or areas for which it is easiest to reach your thumb. This was a major oversight on our fault as we had not thought to test the prototype on a phone when developing it.



As a result, three out of the five icons were changed.



The home icon stayed the same, as this is a broadly recognized symbol for home. However, the contents of this page were the most drastically changed between the first and second prototype.

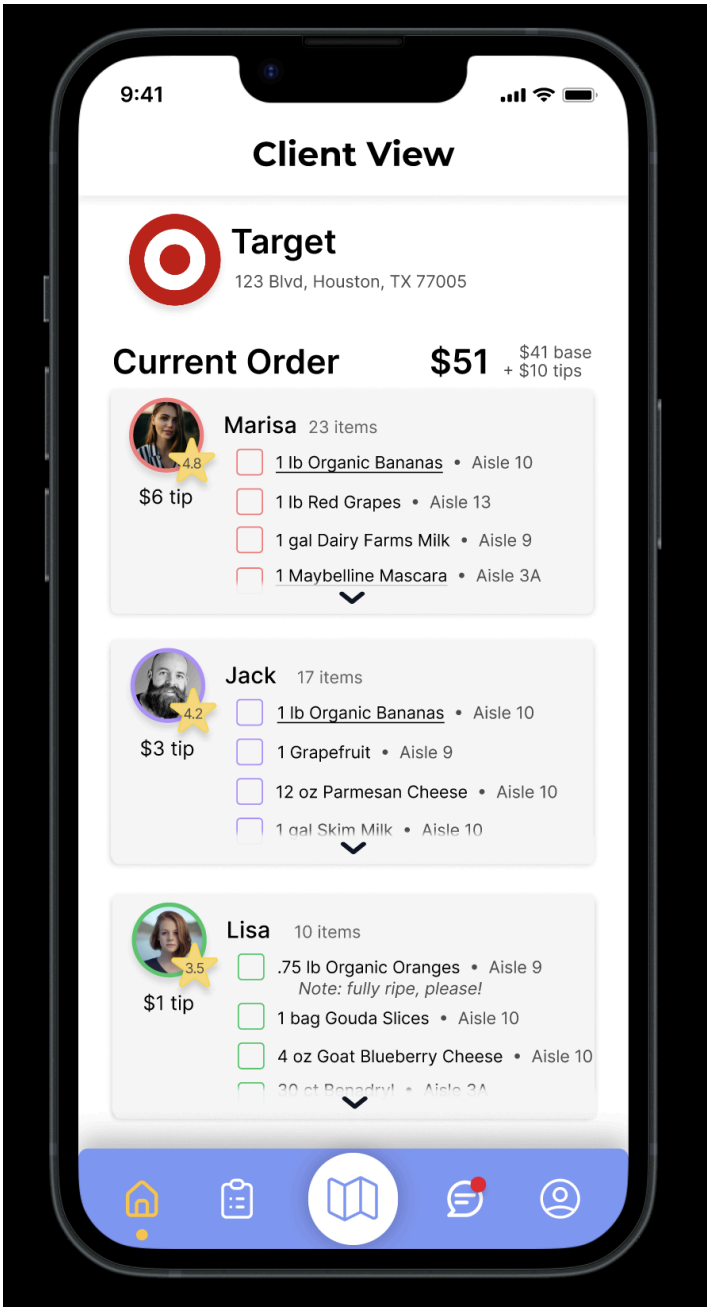
The second icon from the left is a clipboard icon. We felt that this made the most sense for our shoppers to associate a clipboard with tasks or a list. This icon takes the shoppers to the slightly altered list view page.

The middle icon is a trifold map. This icon was used as a recognizable association to a map for our shopper demographic. Further testing may be needed to see if shoppers associate the icon with a map, but we felt that it was generally understood especially by the age range of likely shoppers.

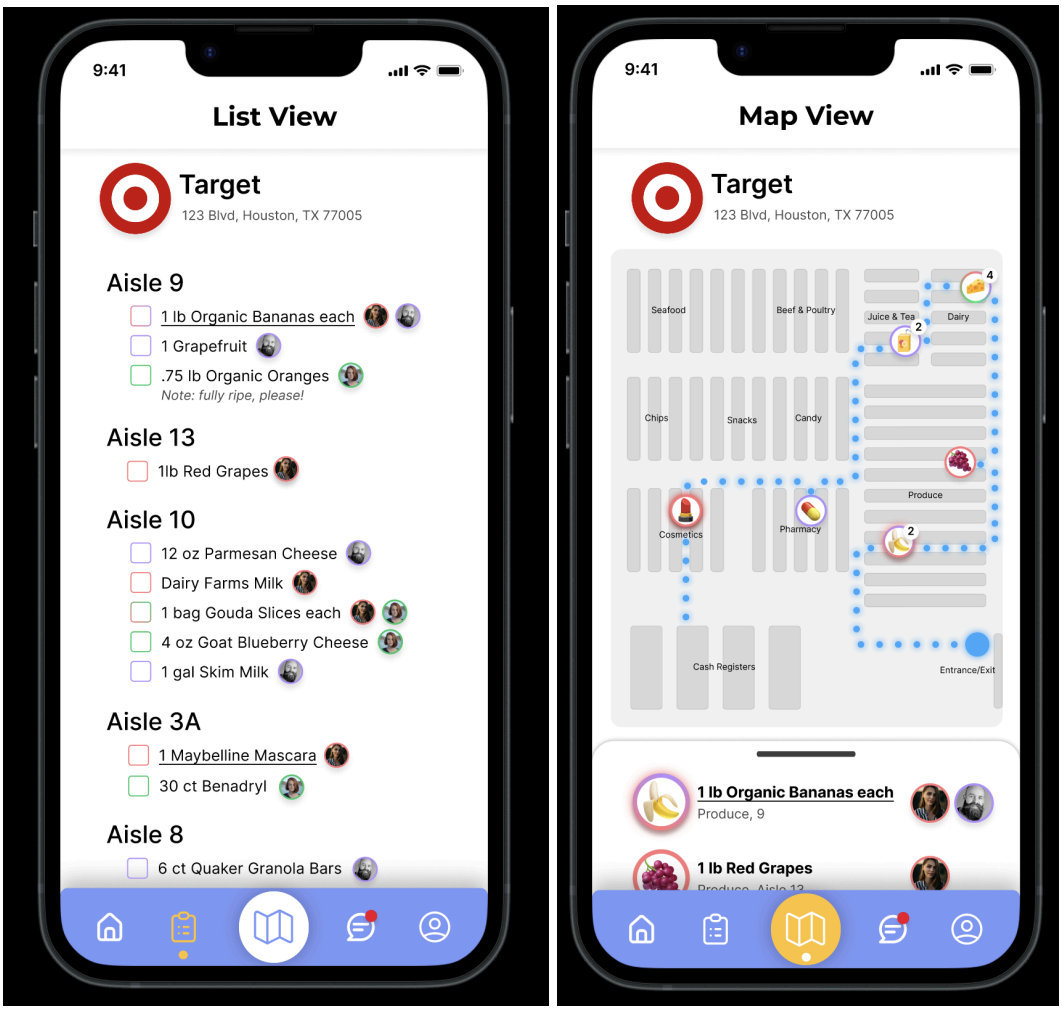
The fourth icon is the same message icon and flows to the same messaging page with more messaging prototypes built out, particularly for Lisa's note about oranges.

The final icon is a changed profile icon. In our improved prototype we felt that there was no need to separate the profile page and the payments page, so shoppers can access their payment history in the profile section. Additionally, the previously used profile icon did not fit as well with the rounded and closed-shape theme of the navigation bar, so we changed to the one currently in the prototype.

As for each of the views, the Shopping List merged into what is now the home page, so the most change occurred here. The name “Shopping List” or shopper view was also switched out for a more fitting title. The page actually displayed the current clients, so the name was changed to “Client View”. The home page now includes everything that was on the old shopper view, everything that was on the original home page, ratings of the clients, and a more visible amount for the total payout, individual payout, and tips.

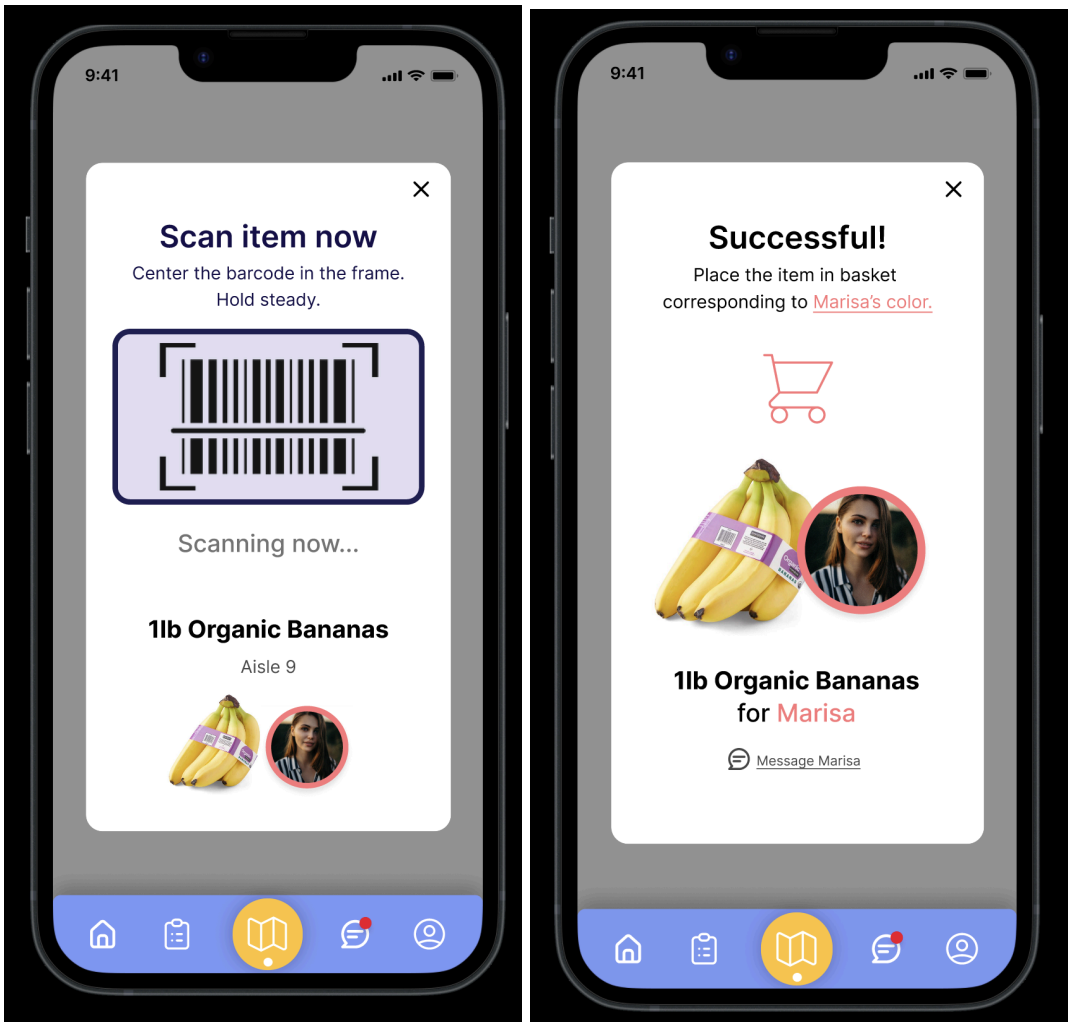


The list view more or less stayed the same with the deletion of the top bar for switching views, and the map view also stayed about the same with a slight increase on the space taken up by the closed taskbar.



The usability testing showed that no shopper noticed the taskbar for the map view but when shown it afterwards said they would have preferred using it over all other views. This improvement aimed to make the closed taskbar more visible to shoppers scrolling in map view. Additionally, the lists on the home page and list view as well as the map on map view were cleaned up to more accurately follow the same optimal path.

As final touches to implementation of the app, we added the ability for shoppers to "scan" the Organic Bananas for Marisa. Previously, only scanning for Jack was an option as that was a task given to users in the Guided Flow portion of the Usability Testing.



Lastly, to accommodate shoppers gravitating towards finding the client's note for an item in the messaging page, a chat feature for the client with a new automated message was added for shoppers to be able to see.